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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MING C. HAO, UMESHWAR DAYAL,
STEPHANY KALIL, PETER WRIGHT, BETTY CANT,
MING-CHIEN SHAN, FABIO CASATI, VIJAY
MACHIRAJU, PANKAJ K. GARG, and KLAUS WURSTER

Appeal 2008-6181
Application 10/694,076
Technology Center 2600

Decided:¹ February 26, 2009

Before ROBERT E. NAPPI, JOHN A. JEFFERY
and MARC S. HOFF, *Administrative Patent Judges*.

NAPPI, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

This is a decision on appeal under 35 U.S.C. § 134 of the final rejection of claims 1 through 25. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm the Examiner's rejection of these claims.

INVENTION

The invention is directed towards a system, method, and computer readable medium for generating a pixel-oriented graph that represents aggregate information by providing visual boundaries. *See generally* Specification 3:3-21. Claim 1 is representative of the invention and reproduced below:

1. A method for generating a pixel-oriented graph, comprising:
determining a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph;
constructing a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary, each pixel block having a set of pixels and each pixel having a pixel value that visually represents one of the values of the variable.

REFERENCES

Daniel A. Keim, Ming C.Hao, & Umeshwar Dayal, *Hierarchical Pixel Bar Charts*, 8 IEEE Trans. on Visualization and Comp. Graphics (No. 3) 255, 255-69 (2002).²

Daniel A. Keim, *Designing Pixel-Oriented Visualization Techniques: Theory and Applications*, 6 IEEE Trans. on Visualization and Comp. Graphics (No. 1) 59, 59-78 (2000).³

² This reference hereinafter referred to as Keim 2002.

³ This reference hereinafter referred to as Keim 2000.

REJECTIONS AT ISSUE

The Examiner rejected claims 1, 2, 8, 11, 13-15, 18, 20-22, and 24 under 35 U.S.C. § 102(a)⁴ as being anticipated by Keim 2002.

The Examiner rejected claims 3-5, 9, 10, 12, 16, 17, 19, 23, and 25 under 35 U.S.C. § 103(a) as being unpatentable over Keim 2002.

The Examiner rejected claims 6 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Keim 2002 in view of Keim 2000.

ISSUES

The Anticipation Rejection over Keim 2002

Appellants argue on pages 3 through 6 of the Appeal Brief and pages 1 through 3 of the Reply Brief that the Examiner's anticipation rejection of claims 1, 2, 8, 11, 13-15, 20-22, and 24 over Keim 2002 is in error. We select independent claim 1 as representative of the group comprising claims 1, 2, 8, 11, 13-15, 20-22, and 24 since Appellants did not separately argue any of the claims with particularity apart from claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii). Appellants argue that Keim 2002 does not teach "a visual boundary for representing *an aggregate* of a set of values of a *variable depicted in a pixel-oriented graph*." App. Br. 4.

Thus, with respect to claims 1, 2, 8, 11, 13-15, 20-22, and 24, Appellants' contentions present us with the issue: have Appellants shown that the Examiner erred in finding that Keim 2002 teaches a visual boundary

⁴ The Keim 2002 reference also qualifies as prior art under 35 U.S.C. § 102(b).

for representing an aggregate of a set of values of a variable depicted in a pixel-oriented graph under § 102?

The Obvious Rejection over Keim 2002

Claims 3-5, 10, and 17

Appellants argue on page 7 of the Appeal Brief that the Examiner's rejection of claims 3-5, 10, and 17 under 35 U.S.C. § 103(a) as being unpatentable over Keim 2002 is in error. Appellants reason that claims 3-5, 10, and 17 are allowable based on their dependency from independent claims 1 and 13. App. Br. 7.

Thus, Appellants' contentions present the same issues as presented with respect to claims 1 and 13.

Claims 9, 16, and 23

Appellants argue on pages 7 through 8 of the Appeal Brief and on page 3 of the Reply Brief that the Examiner's rejection of claims 9, 16, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Keim 2002 is in error. We select claim 9 as representative of the group comprising claims 9, 16, and 23 since Appellants did not separately argue any of the claims with particularity apart from claim 9. *See* 37 C.F.R. § 41.37(c)(1)(vii). Appellants argue that Keim 2002 does not disclose replicating one or more pixels in the pixel blocks to fill in one or more gaps in the pixel blocks. App. Br. 7.

Thus, Appellants' contentions present us with the issue: have Appellants shown the Examiner erred in finding that Keim 2002 teaches

replicating one or more pixels in the pixel blocks to fill in one or more gaps in the pixel blocks under § 103?

Claims 12, 19, and 25

Appellants argue on page 8 of the Appeal Brief that the Examiner's rejection of claims 12, 19, and 25 under 35 U.S.C. § 103(a) as being unpatentable over Keim 2002 is in error. We select claim 12 as representative of the group comprising claims 12, 19, and 25 since Appellants did not separately argue any of the claims with particularity apart from claim 12. *See* 37 C.F.R. § 41.37(c)(1)(vii). Appellants argue that the reference does not disclose assigning a weight to a visual boundary that indicates the importance of the aggregate. App. Br. 8.

Thus, Appellants' contentions present us with the issue: have Appellants shown the Examiner erred in finding that Keim 2002 teaches assigning a weight to a visual boundary that indicates the importance of the aggregate under § 103?

The Obvious Rejection over Keim 2002 in view of Keim 2000

Appellants argue on page 9 of the Appeal Brief that the Examiner's rejection of claims 6 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Keim 2002 in view of Keim 2000 is in error. Appellants reason that claims 6 and 7 are allowable based on their dependency from independent claim 1 and dependent claim 4. App. Br. 9.

Thus, Appellants' contentions present the same issues as presented with respect to claims 1 and 4.

FINDINGS OF FACT

Keim 2002

1. Keim 2002 teaches a method of creating hierarchical pixel bar charts. Abstract.
2. The pixel bar charts contain a bar with a particular height and width. The height of the bar indicates the level of hierarchy (determined by how the data is presented) and the width is determined by the actual data to be displayed. Pg. 258, col. 1, § 3.3 and Figs. 12-15.
3. The pixel bar charts contain data that is displayed as dividing attributes (D_x and D_y), ordering attributes (O_x and O_y), and a coloring attribute (C). Pg. 259, col. 2 and Fig. 6.
4. As an example, Figure 12(a) displays a particular day (D_x), with the number of waiting messages (O_x), and the round trip time (O_y) that can be illustrated using particular colors (C) for each pixel. The width of the bar is therefore determined by the number of waiting messages. Bright colors map to high data values and dark colors map to low data values. Therefore, a red pixel (a transaction that exceeds a threshold of 30 seconds) has a longer round trip time than a green pixel. Pg. 261, n.2, pg. 264, col. 2, § 6.1, and Fig. 12(a).
5. The height of the bars can take on different levels, each representing a particular hierarchy. For instance, the first (highest)

- level may represent days; the second level may represent hours; and the third (lowest) level may represent minutes. Pg. 264, col. 2, § 6.1 through pg. 265, col. 1 and Figs. 13-15.
6. After the height and the width of the bars are determined, the pixels are placed into the corresponding regions according to O_x and O_y . Pg. 261, col. 1, § 4.3, pg. 264, col. 2, § 6.1, and Figs. 12-15.
 7. In order to show aggregated values, Keim 2002 discloses the use of average/median lines. These lines are a visual boundary that separates the bar into two parts. The data above the line exceeds the average/median value while the data below the line is below the average/median value. Pg. 264, col. 1, § 5.2, and Fig. 12(a).
 8. In the example described above, the bar with the lowest average/median line indicates the day containing messages with the highest round trip time. Pg. 264, col. 1, § 5.2, and Fig. 12(a).

PRINCIPLES OF LAW

Office personnel must rely on Appellants' disclosure to properly determine the meaning of the terms used in the claims. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995) (en banc). "[I]nterpreting what is *meant* by a word *in* a claim is not to be confused with adding an extraneous limitation appearing in the specification, which is improper." *In re Cruciferous Sprout Litigation*, 301 F.3d 1343, 1348 (Fed. Cir. 2002) (internal quotation marks and citations omitted; emphasis in original).

On the issue of obviousness, the Supreme Court has stated that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1739 (2007).

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . . [A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

Id. at 1740. “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 1742.

ANALYSIS

Rejection of claims 1, 2, 8, 11, 13-15, 20-22, and 24 under 35 U.S.C. § 102(a) as anticipated by Keim 2002

Appellants’ arguments have not persuaded us that the Examiner erred in rejecting claims 1, 2, 8, 11, 13-15, 20-22, and 24 as being anticipated by Keim 2002. Appellants argue that the dividing attributes of Keim 2002, D_x and D_y, do not provide a visual boundary as required by the claim. App. Br. 4. In addition, Appellants argue that even if Keim 2002 discloses the steps

as claimed, Keim 2002 discloses them out of order. Reply Br. 2. We disagree.

Claim 1 recites “determining a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph.” The Examiner has found the visual boundary to be the bar in the pixel bar chart. Ans. 10. We agree.

Keim 2002 teaches a method of creating hierarchical pixel bar charts. FF 1. Each hierarchical pixel bar chart contains a “bar” of a particular height and width. FF 2. The height of the bars often indicates the different levels of hierarchy, as will be explained in the example below. FF 2. The width of the bars is conditioned upon the data to be displayed. FF 2. The data is displayed as dividing attributes (D_x and D_y), ordering attributes (O_x and O_y), and a coloring attribute (C). FF 3. For example, information to be displayed could be a particular day (D_x), with the number of waiting messages (O_x), and the round trip time (O_y) that can be illustrated using particular colors (C) for each pixel. FF 4. As the color gets brighter the data values of the pixels are increased; whereas, if the color gets darker the data values of the pixels are decreased. FF 4. The height of the bars is pre-selected according to how the data is to be presented. FF 5. The first level (height) of the bars may indicate the days, followed by the second level that indicates the hours, and lastly by the third level that indicates minutes. FF 5. If the number of waiting text messages (O_x) on a particular day is greater than another day, the bar’s width will be larger. FF 4. As a result, a visual boundary is created by the height and width of the bar for a particular set of values. Thus, we find that the evidence supports the Examiner’s finding that the reference teaches the visual boundary, as claimed.

Appellants additionally argue that even if the steps of claim 1 are taught by Keim 2002, there is nothing to indicate that the visual boundary is determined first and then a set of pixel blocks are constructed. Reply Br. 2. We disagree. As stated above, Keim 2002 creates the visual boundary by first determining the height of bars, based upon how the data is to be displayed. FF 2 and 5. Then, the width of the bars is determined based upon the data received. FF 2 and 4. After the visual boundary has been created, the pixels are placed in the corresponding regions according to O_x and O_y . FF 6. As a result, we find there is no indication in the reference that indicates that the hierarchical pixel bar charts are created in any other order than as claimed in claim 1. Thus, Appellants' arguments have not persuaded us of error in the Examiner's anticipation rejection of claim 1 and we therefore sustain the rejection of that claim, as well as that of claims 2, 8, 11, 13-15, 20-22, and 24 which fall with claim 1.

Rejection of claims 3-5, 9, 10, 12, 16, 17, 19, 23, and 25 under 35 U.S.C. § 103(a) as being unpatentable over Keim 2002

Claims 3-5, 10, and 17

Appellants' arguments have not persuaded us of error in the Examiner's obviousness rejection of claims 3-5, 10, and 17. Appellants' arguments that the rejection of these claims is in error is not persuasive for the reasons discussed *supra* with respect to independent claims 1 and 13. Therefore, we sustain the Examiner's obviousness rejection of claims 3-5, 10, and 17.

Claims 9, 16, and 23

Appellants' arguments have not persuaded us of error in the Examiner's rejection of claims 9, 16, and 23. Representative claim 9 recites "filling in one or more gaps in the pixel blocks by replicating one or more pixels in the pixel blocks." Keim 2002 teaches that creating the pixel bar charts involves (1) determining a pixel color (C) and (2) placing the pixels in the corresponding region. FF 3, 4, and 6. In the example described above, a red pixel has a longer round trip time than a pixel that is green. FF 4. Since pixels are placed in the pixel bar chart, the color of the pixel is replicated for each data point containing the same round trip time. For instance, pixels are colored red for every transaction that exceeds a threshold of 30 seconds. FF 4. Since we find that Keim 2002 teaches replicating one or more pixel blocks, we therefore sustain the Examiner's obviousness rejection of claims 9, 16, and 23.

Claims 12, 19, and 25

Appellants' arguments have not persuaded us of error in the Examiner's rejection of claims 12, 19, and 25. Representative claim 12 recites "applying a weight to the visual boundary that indicates a relative importance of the aggregate." As discussed above, Keim 2002 discloses a visual boundary that includes the width and the height of the bar. FF 2. In addition, Keim 2002 discloses another type of visual boundary. FF 7. In order to show aggregated values, average/median lines are employed in pixel bar charts. FF 7. The average/median line is a visual boundary that separates the bar into two parts. FF 7. The data above exceeds the average/median value while the data below is below the average/median

value. FF 7. In the example we discussed *supra*, the lowest average/median line on the pixel bar chart indicates the day containing messages with the highest round trip time. FF 8. As a result, a weight, i.e., the average/median value, is assigned to the average/median line which indicates the relative importance of the aggregated data. Thus, we find that Keim 2002 teaches applying a weight to the visual boundary that indicates a relative importance of the aggregate, as claimed, and we sustain the Examiner's obviousness rejection of claims 12, 19, and 25.

Rejection of claims 6 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Keim 2002 in view of Keim 2000

Appellants' arguments have not persuaded us of error in the Examiner's rejection of claims 6 and 7. Appellants' arguments are not persuasive for the reasons discussed *supra* with respect to independent claim 1 and dependent claim 4. Therefore, we sustain the Examiner's obviousness rejection of claims 6 and 7.

CONCLUSIONS OF LAW

Appellants have not shown that the Examiner erred in finding Keim 2002 teaches a visual boundary for representing an aggregate of a set of values of a variable depicted in a pixel-oriented graph in rejecting representative claim 1 under § 102.

Appellants have not shown that the Examiner erred in finding that Keim 2002 teaches replicating one or more pixels in the pixel blocks to fill in one or more gaps in the pixel blocks in rejecting representative claim 9 under § 103.

Appellants have not shown that the Examiner erred in finding that Keim 2002 teaches assigning a weight to a visual boundary that indicates the importance of the aggregate in rejecting representative claim 12 under § 103.

SUMMARY

The Examiner's rejection of claims 1 through 25 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

ELD

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